Analytical Laboratory

13339 Hagers Ferry Road
Huntersville, NC 28078-7929
McGuire Nuclear Complex - MG03A2
Phone: 980-875-5245 Fax: 980-875-4349

Order Summary Report

Order Number: **J12100090**

Customer Name(s): Don Scruggs, Robbin Jolly, Ray Lidke, Bill Kennedy

Customer Address: 253 Plant Allen Road

Belmont, NC 28012

Lab Contact: Jason C Perkins Phone: 980-875-5348

Report Authorized By: (Signature) Digitally signed by jay perkins DN: cn=jay perkins, o=Analytical Lab, ou, email=jay.perkins@duke-energy.com, c=US Date: 2012.11.05 11:28:33 -05'00' **Date:** 11/5/2012

Program Comments:

Please contact the Program Manager (Jason C Perkins) with any questions regarding this report.

Data Flags & Calculations:

Any analytical tests or individual analytes within a test flagged with a Qualifier indicate a deviation from the method quality system or quality control requirement. The qualifier description is found at the end of the Certificate of Analysis (sample results) under the qualifiers heading. All results are reported on a dry weight basis unless otherwise noted. Subcontracted data included on the Duke Certificate of Analysis is to be used as information only. Certified vendor results can be found in the subcontracted lab final report. Duke Energy Analytical Laboratory subcontracts analyses to other vendor laboratories that have been qualified by Duke Energy to perform these analyses except where noted.

Data Package:

This data package includes analytical results that are applicable only to the samples described in this narrative. An estimation of the uncertainty of measurement for the results in the report is available upon request. This report shall not be reproduced, except in full, without the written consent of the Analytical Laboratory. Please contact the Analytical laboratory with any questions. The order of individual sections within this report is as follows:

Job Summary Report, Sample Identification, Technical Validation of Data Package, Analytical Laboratory Certificate of Analysis, Analytical Laboratory QC Reports, Sub-contracted Laboratory Results, Customer Specific Data Sheets, Reports & Documentation, Customer Database Entries, Test Case Narratives, Chain of Custody (COC)

Certification:

The Analytical Laboratory holds the following State Certifications : North Carolina (DENR) Certificate #248, South Carolina (DHEC) Laboratory ID # 99005. Contact the Analytical Laboratory for definitive information about the certification status of specific methods.

Sample ID's & Descriptions:

Sample ID	Plant/Station	Collection Date and Time	Collected By	Sample Description
2012021129	ALLEN	17-Oct-12 12:40 PM	Chris Williams	FGD Purge Eff
2012021130	ALLEN	17-Oct-12 12:23 PM	Chris Williams	EQ Tank Eff
2012021131	ALLEN	17-Oct-12 12:05 PM	Chris Williams	BioReactor 1 Inf
2012021132	ALLEN	17-Oct-12 12:11 PM	Chris Williams	BioReactor 2 Inf
2012021133	ALLEN	17-Oct-12 12:18 PM	Chris Williams	BioReactor 2 Eff
2012021134	ALLEN	17-Oct-12 12:50 PM	Chris Williams	Filter Blk
2012021135	ALLEN	03-Oct-12 11:15 AM	J. TALLENT	TRIP BLANK
2012021137	ALLEN	17-Oct-12 12:05 PM	Chris Williams	BioReactor 1 Inf
2012021138	ALLEN	17-Oct-12 12:05 PM	Chris Williams	Hg Blk BioReactor 1 Inf
2012021139	ALLEN	17-Oct-12 12:11 PM	Chris Williams	BioReactor 2 Inf
2012021140	ALLEN	17-Oct-12 12:11 PM	Chris Williams	Hg Blk BioReactor 2 Inf
2012021141	ALLEN	17-Oct-12 12:18 PM	Chris Williams	BioReactor 2 Eff
2012021142	ALLEN	17-Oct-12 12:18 PM	Chris Williams	Hg Blk BioReactor 2 Eff

13 Total Samples

Technical Validation Review

Checklist:

COC and .pdf report are in agreement with sample totals and analyses (compliance programs and procedures).	☑ Yes	☐ No
All Results are less than the laboratory reporting limits.	☐ Yes	☑ No
All laboratory QA/QC requirements are acceptable.	☑ Yes	☐ No

Report Sections Included:

- ☑ Job Summary Report
- ☑ Sample Identification
- ☑ Technical Validation of Data Package
- ☑ Analytical Laboratory Certificate of Analysis
- ☐ Analytical Laboratory QC Report
- ☑ Sub-contracted Laboratory Results
- ☐ Customer Specific Data Sheets, Reports, & Documentation
- ☐ Customer Database Entries
- ☑ Chain of Custody
- ☑ Electronic Data Deliverable (EDD) Sent Separately

Reviewed By: DBA Account Date: 11/5/2012

Certificate of Laboratory Analysis

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Order # J12100090

Site: FGD Purge Eff — **Sample #: 2012021129**

Collection Date: 17-Oct-12 12:40 PM — Matrix: OTHER

Analyte	Result	Units	Qualifiers	RDL	DF	Method	Analysis Date/Time	Analyst
INORGANIC IONS BY IC								
Bromide	**520**	mg/L		50	500	EPA 300.0	10/25/2012 11:13	BGN9034
Chloride	**1300**	mg/L		50	500	EPA 300.0	10/25/2012 11:13	BGN9034
MERCURY (COLD VAPOR) IN WATER								
Mercury (Hg)	**9.05**	ug/L		2.5	50	EPA 245.1	10/25/2012 13:36	AGIBBS
TOTAL RECOVERABLE METALS BY ICP								
Boron (B)	**22.6**	mg/L		0.5	10	EPA 200.7	10/24/2012 11:40	DJSULL1
DISSOLVED METALS BY ICP-MS								
Selenium (Se)	**999**	ug/L		10	10	EPA 200.8	10/23/2012 11:40	DJSULL1
TOTAL RECOVERABLE METALS BY ICP-MS								
Arsenic (As)	**174**	ug/L		10	10	EPA 200.8	10/25/2012 11:46	KRICHAR
Chromium (Cr)	**167**	ug/L		10	10	EPA 200.8	10/25/2012 11:46	KRICHAR
Copper (Cu)	**166**	ug/L		10	10	EPA 200.8	10/25/2012 11:46	KRICHAR
Nickel (Ni)	**232**	ug/L		10	10	EPA 200.8	10/25/2012 11:46	KRICHAR
Selenium (Se)	**3290**	ug/L		10	10	EPA 200.8	10/25/2012 11:46	KRICHAR
Silver (Ag)	**< 10**	ug/L		10	10	EPA 200.8	10/25/2012 11:46	KRICHAR
Zinc (Zn)	**209**	ug/L		10	10	EPA 200.8	10/25/2012 11:46	KRICHAR
SELENIUM SPECIATION - (Analysis Performed by Applied Speciation and Consulting, LLC)								
Vendor Parameter	**Complete**					Vendor Method		V_AS&C
TOTAL DISSOLVED SOLIDS								
TDS	**7500**	mg/L		200	1	SM2540C	10/22/2012 16:50	SWILLI3

Site: EQ Tank Eff — **Sample #: 2012021130**

Collection Date: 17-Oct-12 12:23 PM — Matrix: OTHER

Analyte	Result	Units	Qualifiers	RDL	DF	Method	Analysis Date/Time	Analyst
MERCURY (COLD VAPOR) IN WATER								
Mercury (Hg)	**7.45**	ug/L		2.5	50	EPA 245.1	10/25/2012 13:39	AGIBBS
TOTAL RECOVERABLE METALS BY ICP								
Boron (B)	**23.7**	mg/L		0.5	10	EPA 200.7	10/24/2012 11:44	DJSULL1
DISSOLVED METALS BY ICP-MS								
Selenium (Se)	**618**	ug/L		10	10	EPA 200.8	10/23/2012 11:44	DJSULL1

Certificate of Laboratory Analysis

Order # J12100090

Site: EQ Tank Eff — **Sample #: 2012021130**
Collection Date: 17-Oct-12 12:23 PM — Matrix: OTHER

Analyte	Result	Units	Qualifiers	RDL	DF	Method	Analysis Date/Time	Analyst
TOTAL RECOVERABLE METALS BY ICP-MS								
Arsenic (As)	**58.8**	ug/L		10	10	EPA 200.8	10/25/2012 11:49	KRICHAR
Chromium (Cr)	**69.9**	ug/L		10	10	EPA 200.8	10/25/2012 11:49	KRICHAR
Copper (Cu)	**74.2**	ug/L		10	10	EPA 200.8	10/25/2012 11:49	KRICHAR
Nickel (Ni)	**104**	ug/L		10	10	EPA 200.8	10/25/2012 11:49	KRICHAR
Selenium (Se)	**1030**	ug/L		10	10	EPA 200.8	10/25/2012 11:49	KRICHAR
Silver (Ag)	**< 10**	ug/L		10	10	EPA 200.8	10/25/2012 11:49	KRICHAR
Zinc (Zn)	**102**	ug/L		10	10	EPA 200.8	10/25/2012 11:49	KRICHAR

Site: BioReactor 1 Inf — **Sample #: 2012021131**
Collection Date: 17-Oct-12 12:05 PM — Matrix: OTHER

Analyte	Result	Units	Qualifiers	RDL	DF	Method	Analysis Date/Time	Analyst
TOTAL RECOVERABLE METALS BY ICP								
Boron (B)	**23.7**	mg/L		0.5	10	EPA 200.7	10/24/2012 11:48	DJSULL1
DISSOLVED METALS BY ICP-MS								
Selenium (Se)	**673**	ug/L		10	10	EPA 200.8	10/23/2012 11:48	DJSULL1
TOTAL RECOVERABLE METALS BY ICP-MS								
Arsenic (As)	**< 10**	ug/L		10	10	EPA 200.8	10/25/2012 11:52	KRICHAR
Chromium (Cr)	**< 10**	ug/L		10	10	EPA 200.8	10/25/2012 11:52	KRICHAR
Copper (Cu)	**< 10**	ug/L		10	10	EPA 200.8	10/25/2012 11:52	KRICHAR
Nickel (Ni)	**< 10**	ug/L		10	10	EPA 200.8	10/25/2012 11:52	KRICHAR
Selenium (Se)	**714**	ug/L		10	10	EPA 200.8	10/25/2012 11:52	KRICHAR
Silver (Ag)	**< 10**	ug/L		10	10	EPA 200.8	10/25/2012 11:52	KRICHAR
Zinc (Zn)	**< 10**	ug/L		10	10	EPA 200.8	10/25/2012 11:52	KRICHAR
SELENIUM SPECIATION - (Analysis Performed by Applied Speciation and Consulting, LLC)								
Vendor Parameter	**Complete**					Vendor Method		V_AS&C

Site: BioReactor 2 Inf — **Sample #: 2012021132**
Collection Date: 17-Oct-12 12:11 PM — Matrix: OTHER

Analyte	Result	Units	Qualifiers	RDL	DF	Method	Analysis Date/Time	Analyst
TOTAL RECOVERABLE METALS BY ICP								
Boron (B)	**28.8**	mg/L		0.5	10	EPA 200.7	10/24/2012 11:52	DJSULL1

Certificate of Laboratory Analysis

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Order # J12100090

Site: BioReactor 2 Inf **Sample #: 2012021132**

Collection Date: 17-Oct-12 12:11 PM Matrix: OTHER

Analyte	Result	Units	Qualifiers	RDL	DF	Method	Analysis Date/Time	Analyst
TOTAL RECOVERABLE METALS BY ICP-MS								
Arsenic (As)	**< 10**	ug/L		10	10	EPA 200.8	10/25/2012 11:56	KRICHAR
Chromium (Cr)	**< 10**	ug/L		10	10	EPA 200.8	10/25/2012 11:56	KRICHAR
Copper (Cu)	**< 10**	ug/L		10	10	EPA 200.8	10/25/2012 11:56	KRICHAR
Nickel (Ni)	**< 10**	ug/L		10	10	EPA 200.8	10/25/2012 11:56	KRICHAR
Selenium (Se)	**20.3**	ug/L		10	10	EPA 200.8	10/25/2012 11:56	KRICHAR
Silver (Ag)	**< 10**	ug/L		10	10	EPA 200.8	10/25/2012 11:56	KRICHAR
Zinc (Zn)	**< 10**	ug/L		10	10	EPA 200.8	10/25/2012 11:56	KRICHAR

Site: BioReactor 2 Eff **Sample #: 2012021133**

Collection Date: 17-Oct-12 12:18 PM Matrix: OTHER

Analyte	Result	Units	Qualifiers	RDL	DF	Method	Analysis Date/Time	Analyst
INORGANIC IONS BY IC								
Bromide	**360**	mg/L		50	500	EPA 300.0	10/25/2012 11:32	BGN9034
Chloride	**1100**	mg/L		50	500	EPA 300.0	10/25/2012 11:32	BGN9034
MERCURY (COLD VAPOR) IN WATER								
Mercury (Hg)	**< 1**	ug/L		1	20	EPA 245.1	10/25/2012 13:41	AGIBBS
TOTAL RECOVERABLE METALS BY ICP								
Boron (B)	**32.4**	mg/L		0.5	10	EPA 200.7	10/24/2012 11:56	DJSULL1
TOTAL RECOVERABLE METALS BY ICP-MS								
Arsenic (As)	**< 5**	ug/L		5	5	EPA 200.8	10/25/2012 11:59	KRICHAR
Chromium (Cr)	**< 5**	ug/L		5	5	EPA 200.8	10/25/2012 11:59	KRICHAR
Copper (Cu)	**< 5**	ug/L		5	5	EPA 200.8	10/25/2012 11:59	KRICHAR
Nickel (Ni)	**< 5**	ug/L		5	5	EPA 200.8	10/25/2012 11:59	KRICHAR
Selenium (Se)	**7.30**	ug/L		5	5	EPA 200.8	10/25/2012 11:59	KRICHAR
Silver (Ag)	**< 5**	ug/L		5	5	EPA 200.8	10/25/2012 11:59	KRICHAR
Zinc (Zn)	**< 5**	ug/L		5	5	EPA 200.8	10/25/2012 11:59	KRICHAR
SELENIUM SPECIATION - (Analysis Performed by Applied Speciation and Consulting, LLC)								
Vendor Parameter	**Complete**					Vendor Method		V_AS&C

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Order # J12100090

Site: Filter Blk — **Sample #: 2012021134**
Collection Date: 17-Oct-12 12:50 PM — Matrix: OTHER

Analyte	Result	Units	Qualifiers	RDL	DF	Method	Analysis Date/Time	Analyst
DISSOLVED METALS BY ICP-MS								
Selenium (Se)	**< 1**	ug/L		1	1	EPA 200.8	10/23/2012 11:14	DJSULL1

Site: TRIP BLANK — **Sample #: 2012021135**
Collection Date: 03-Oct-12 11:15 AM — Matrix: OTHER

Analyte	Result	Units	Qualifiers	RDL	DF	Method	Analysis Date/Time	Analyst
TOTAL RECOVERABLE METALS BY ICP								
Boron (B)	**< 0.05**	mg/L		0.05	1	EPA 200.7	10/24/2012 11:36	DJSULL1
TOTAL RECOVERABLE METALS BY ICP-MS								
Arsenic (As)	**< 1**	ug/L		1	1	EPA 200.8	10/25/2012 11:43	KRICHAR
Chromium (Cr)	**< 1**	ug/L		1	1	EPA 200.8	10/25/2012 11:43	KRICHAR
Copper (Cu)	**< 1**	ug/L		1	1	EPA 200.8	10/25/2012 11:43	KRICHAR
Nickel (Ni)	**< 1**	ug/L		1	1	EPA 200.8	10/25/2012 11:43	KRICHAR
Selenium (Se)	**< 1**	ug/L		1	1	EPA 200.8	10/25/2012 11:43	KRICHAR
Silver (Ag)	**< 1**	ug/L		1	1	EPA 200.8	10/25/2012 11:43	KRICHAR
Zinc (Zn)	**< 1**	ug/L		1	1	EPA 200.8	10/25/2012 11:43	KRICHAR

Site: BioReactor 1 Inf — **Sample #: 2012021137**
Collection Date: 17-Oct-12 12:05 PM — Matrix: OTHER

Analyte	Result	Units	Qualifiers	RDL	DF	Method	Analysis Date/Time	Analyst
MERCURY 1631 - (Analysis Performed by Brooks Rand Labs LLC)								
Vendor Parameter	**Complete**					Vendor Method		V_BRAND

Site: Hg Blk BioReactor 1 Inf — **Sample #: 2012021138**
Collection Date: 17-Oct-12 12:05 PM — Matrix: OTHER

Analyte	Result	Units	Qualifiers	RDL	DF	Method	Analysis Date/Time	Analyst
MERCURY 1631 - (Analysis Performed by Brooks Rand Labs LLC)								
Vendor Parameter	**Complete**					Vendor Method		V_BRAND

Certificate of Laboratory Analysis

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Order # J12100090

Site: BioReactor 2 Inf — **Sample #: 2012021139**
Collection Date: 17-Oct-12 12:11 PM — Matrix: OTHER

Analyte	Result	Units	Qualifiers	RDL	DF	Method	Analysis Date/Time	Analyst
MERCURY 1631 - (Analysis Performed by Brooks Rand Labs LLC)								
Vendor Parameter	**Complete**					Vendor Method		V_BRAND

Site: Hg Blk BioReactor 2 Inf — **Sample #: 2012021140**
Collection Date: 17-Oct-12 12:11 PM — Matrix: OTHER

Analyte	Result	Units	Qualifiers	RDL	DF	Method	Analysis Date/Time	Analyst
MERCURY 1631 - (Analysis Performed by Brooks Rand Labs LLC)								
Vendor Parameter	**Complete**					Vendor Method		V_BRAND

Site: BioReactor 2 Eff — **Sample #: 2012021141**
Collection Date: 17-Oct-12 12:18 PM — Matrix: OTHER

Analyte	Result	Units	Qualifiers	RDL	DF	Method	Analysis Date/Time	Analyst
MERCURY 1631 - (Analysis Performed by Brooks Rand Labs LLC)								
Vendor Parameter	**Complete**					Vendor Method		V_BRAND

Site: Hg Blk BioReactor 2 Eff — **Sample #: 2012021142**
Collection Date: 17-Oct-12 12:18 PM — Matrix: OTHER

Analyte	Result	Units	Qualifiers	RDL	DF	Method	Analysis Date/Time	Analyst
MERCURY 1631 - (Analysis Performed by Brooks Rand Labs LLC)								
Vendor Parameter	**Complete**					Vendor Method		V_BRAND

November 2, 2012

Duke Energy
ATTN: Jay Perkins
Scientific Support-Laboratory
13339 Hagers Ferry Road
Huntersville NC 28078
jcperkins@duke-energy.com
labcustomer@duke-energy.com

RE: Project DUK-HV1201 Client Project: J12100090

Dear Mr. Perkins,

On October 19, 2012, Brooks Rand Labs (BRL) received three (3) wastewater samples and three (3) corresponding field blanks. The samples were logged-in for total mercury (Hg) analysis according to the chain-of-custody form. All samples were received, prepared, analyzed, and stored according to BRL SOPs and EPA methodology.

The results were blank-corrected as described in the calculations section of the relevant SOP and may have been evaluated using reporting limits that have been adjusted to account for sample aliquot size. Please refer to the *Sample Results* page for sample-specific MDLs, MRLs, and other details.

Two of the field blank samples yielded detectable results. However, the concentrations were less than the method defined control limit of 0.5 ng/L and the associated field sample results were more than 10x the level of the blank result. Contamination was considered insignificant.

BRL, an accredited laboratory, certifies the reported results of all analyses for which BRL is NELAP accredited meet all NELAP requirements. For more details, see the *Report Information* page of the report. Please feel free to contact me if you have any questions regarding this report.

Sincerely,

Lydia Greaves

Lydia Greaves
Project Manager
lydia@brooksrand.com

Project ID: DUK-HV1201
PM: Tiffany Stilwater

Client PM: Jay Perkins
Client PO: 141391

Report Information

Laboratory Accreditation

BRL is accredited by the *National Environmental Laboratory Accreditation Program* (NELAP) through the State of Florida Department of Health, Bureau of Laboratories (E87982) and is certified to perform many environmental analyses. BRL is also certified by many other states to perform environmental analyses. For a current list of our accreditations /certifications, please visit our website at <http://www.brooksrand.com/default.asp?contentID=586>. Results reported relate only to the samples listed in the report.

Field Quality Control Samples

Please be notified that certain EPA methods require the collection of field quality control samples of an appropriate type and frequency; failure to do so is considered a deviation from some methods and for compliance purposes should only be done with the approval of regulatory authorities. Please see the specific EPA methods for details regarding required field quality control samples.

Common Abbreviations

BLK	method blank	**MS**	matrix spike
BRL	Brooks Rand Labs	**MSD**	matrix spike duplicate
BS	laboratory fortified blank	**ND**	non-detect
CAL	calibration standard	**NR**	non-reportable
CCV	continuing calibration verification	**PS**	post preparation spike
COC	chain of custody record	**REC**	percent recovery
CRM	certified reference material	**RPD**	relative percent difference
D	dissolved fraction	**RSD**	relative standard deviation
DUP	duplicate	**SCV**	secondary calibration verification
ICV	initial calibration verification	**SOP**	standard operating procedure
MDL	method detection limit	**SRM**	standard reference material
MRL	method reporting limit	**T**	total recoverable fraction

Definition of Data Qualifiers

(Effective 9/23/09)

B Detected by the instrument, the result is > the MDL but ≤ the MRL. Result is reported and considered an estimate.
E An estimated value due to the presence of interferences. A full explanation is presented in the narrative.
H Holding time and/or preservation requirements not met. Result is estimated.
J Estimated value. A full explanation is presented in the narrative.
J-M Duplicate precision (RPD) for associated QC sample was not within acceptance criteria. Result is estimated.
J-N Spike recovery for associated QC sample was not within acceptance criteria. Result is estimated.
M Duplicate precision (RPD) was not within acceptance criteria. Result is estimated.
N Spike recovery was not within acceptance criteria. Result is estimated.
R Rejected, unusable value. A full explanation is presented in the narrative.
U Result is ≤ the MDL or client requested reporting limit (CRRL). Result reported as the MDL or CRRL.
X Result is not BLK-corrected and is within 10x the absolute value of the highest detectable BLK in the batch. Result is estimated.

These qualifiers are based on those previously utilized by Brooks Rand Labs, those found in the EPA SOW ILM03.0, Exhibit B, Section III, pg. B-18, and the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review; USEPA; January 2010. These supersede all previous qualifiers ever employed by BRL.

Project ID: DUK-HV1201
PM: Tiffany Stilwater

Client PM: Jay Perkins
Client PO: 141391

Sample Information

Sample	Lab ID	Report Matrix	Type	Sampled	Received
BioReactor 1 Inf	1242035-01	Influent	Sample	10/17/2012	10/19/2012
Hg Blk BioReactor 1 Inf	1242035-02	DIW	Field Blank	10/17/2012	10/19/2012
BioReactor 2 Inf	1242035-03	Influent	QC Sample	10/17/2012	10/19/2012
Hg Blk BioReactor 2 Inf	1242035-04	DIW	Field Blank	10/17/2012	10/19/2012
BioReactor 2 Eff	1242035-05	Effluent	Sample	10/17/2012	10/19/2012
Hg Blk BioReactor 2 Eff	1242035-06	DIW	Field Blank	10/17/2012	10/19/2012

Batch Summary

Analyte	Lab Matrix	Method	Prepared	Analyzed	Batch	Sequence
Hg	Water	EPA 1631	10/25/2012	10/26/2012	B121977	1200826

Project ID: DUK-HV1201
PM: Tiffany Stilwater

Client PM: Jay Perkins
Client PO: 141391

Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
BioReactor 1 Inf										
1242035-01	Hg	Influent	T	167		3.79	10.1	ng/L	B121977	1200826
BioReactor 2 Eff										
1242035-05	Hg	Effluent	T	61.9		0.38	1.01	ng/L	B121977	1200826
BioReactor 2 Inf										
1242035-03	Hg	Influent	T	98.3		0.79	2.11	ng/L	B121977	1200826
Hg Blk BioReactor 1 Inf										
1242035-02	Hg	DIW	T	0.17	B	0.15	0.41	ng/L	B121977	1200826
Hg Blk BioReactor 2 Eff										
1242035-06	Hg	DIW	T	0.18	B	0.15	0.40	ng/L	B121977	1200826
Hg Blk BioReactor 2 Inf										
1242035-04	Hg	DIW	T	0.16	U	0.16	0.41	ng/L	B121977	1200826

Project ID: DUK-HV1201
PM: Tiffany Stilwater

Client PM: Jay Perkins
Client PO: 141391

Accuracy & Precision Summary

Batch: B121977
Lab Matrix: Water
Method: EPA 1631

Sample	Analyte	Native	Spike	Result	Units	REC & Limits	RPD & Limits
B121977-SRM1	**Certified Reference Material (1241042, NIST 1641d 1000x dilution)**						
	Hg		15.68	15.98	ng/L	102% 85-115	
B121977-MS1	**Matrix Spike (1242035-03)**						
	Hg	98.32	473.7	568.6	ng/L	99% 71-125	
B121977-MSD1	**Matrix Spike Duplicate (1242035-03)**						
	Hg	98.32	473.7	572.4	ng/L	100% 71-125	0.7% 24

Method Blanks & Reporting Limits

Batch: B121977
Matrix: Water
Method: EPA 1631
Analyte: Hg

Sample	Result	Units
B121977-BLK1	0.24	ng/L
B121977-BLK2	0.23	ng/L
B121977-BLK3	0.20	ng/L
B121977-BLK4	0.18	ng/L

Average: 0.21 **Standard Deviation:** 0.03 **MDL:** 0.15
Limit: 0.50 **Limit:** 0.10 **MRL:** 0.39

Project ID: DUK-HV1201
PM: Tiffany Stilwater

Client PM: Jay Perkins
Client PO: 141391

Instrument Calibration

Sequence: 1200826
Instrument: THG-05
Date: 10/26/2012
Analyte: Hg

Total Mercury and Mercury Speciation by CVAFS
Method: EPA 1631

Lab ID	True Value	Result	Units	REC & Limits	
1200826-IBL1		0.72	pg of Hg		
1200826-IBL2		2.01	pg of Hg		
1200826-IBL3		2.09	pg of Hg		
1200826-IBL4		2.05	pg of Hg		
1200826-CAL1	10.00	10.10	pg of Hg	101%	
1200826-CAL2	25.00	25.08	pg of Hg	100%	
1200826-CAL3	100.0	100.7	pg of Hg	101%	
1200826-CAL4	500.0	496.8	pg of Hg	99%	
1200826-CAL5	2500	2501	pg of Hg	100%	
1200826-CAL6	10000	9865	pg of Hg	99%	
1200826-ICV1	1568	1598	pg of Hg	102%	85-115
1200826-CCB1		6.94	pg of Hg		
1200826-CCV1	500.0	506.2	pg of Hg	101%	77-123
1200826-CCB2		3.77	pg of Hg		
1200826-CCB3		2.87	pg of Hg		
1200826-CCB4		2.99	pg of Hg		
1200826-CCV2	500.0	517.5	pg of Hg	103%	77-123
1200826-CCB5		4.58	pg of Hg		
1200826-CCV3	500.0	516.9	pg of Hg	103%	77-123
1200826-CCB6		2.92	pg of Hg		
1200826-CCV4	500.0	512.9	pg of Hg	103%	77-123
1200826-CCB7		4.33	pg of Hg		
1200826-CCV5	500.0	510.3	pg of Hg	102%	77-123
1200826-CCB8		5.33	pg of Hg		
1200826-CCV6	500.0	488.1	pg of Hg	98%	77-123
1200826-CCB9		3.61	pg of Hg		
1200826-CCV7	500.0	494.4	pg of Hg	99%	77-123
1200826-CCBA		2.95	pg of Hg		
1200826-CCV8	500.0	494.7	pg of Hg	99%	77-123
1200826-CCBB		3.13	pg of Hg		
1200826-CCV9	500.0	507.3	pg of Hg	101%	77-123
1200826-CCBC		6.01	pg of Hg		
1200826-CCVA	500.0	515.0	pg of Hg	103%	77-123
1200826-CCBD		5.58	pg of Hg		
1200826-CCVB	500.0	508.6	pg of Hg	102%	77-123
1200826-CCBE		4.18	pg of Hg		
1200826-CCVC	500.0	511.3	pg of Hg	102%	77-123
1200826-CCBF		3.60	pg of Hg		
1200826-CCVD	500.0	493.5	pg of Hg	99%	77-123
1200826-CCBG		3.20	pg of Hg		

Project ID: DUK-HV1201
PM: Tiffany Stilwater

Client PM: Jay Perkins
Client PO: 141391

Instrument Calibration

Sequence: 1200826
Instrument: THG-05
Date: 10/26/2012
Analyte: Hg

Total Mercury and Mercury Speciation by CVAFS
Method: EPA 1631

Lab ID	True Value	Result	Units	REC & Limits	
1200826-CCVE	500.0	510.7	pg of Hg	102%	77-123
1200826-CCBH		3.59	pg of Hg		
1200826-CCVF	500.0	510.6	pg of Hg	102%	77-123
1200826-CCBI		2.91	pg of Hg		
1200826-CCVG	500.0	509.2	pg of Hg	102%	77-123
1200826-CCBJ		4.65	pg of Hg		
1200826-CCVH	500.0	511.4	pg of Hg	102%	77-123
1200826-CCBK		5.07	pg of Hg		
1200826-CCVI	500.0	510.9	pg of Hg	102%	77-123
1200826-CCBL		3.02	pg of Hg		
1200826-CCVJ	500.0	502.5	pg of Hg	100%	77-123
1200826-CCBM		3.43	pg of Hg		
1200826-ICV2	1568	1624	pg of Hg	104%	85-115
1200826-CCVK	500.0	514.6	pg of Hg	103%	77-123
1200826-CCBN		3.78	pg of Hg		
1200826-CCVL	500.0	513.1	pg of Hg	103%	77-123
1200826-CCBO		2.55	pg of Hg		
1200826-CCVM	500.0	516.1	pg of Hg	103%	77-123
1200826-CCBP		2.78	pg of Hg		

Project ID: DUK-HV1201
PM: Tiffany Stilwater

Client PM: Jay Perkins
Client PO: 141391

Sample Containers

Lab ID: 1242035-01
Sample: BioReactor 1 Inf
Report Matrix: Influent
Sample Type: Sample
Collected: 10/17/2012
Received: 10/19/2012

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Bottle FLPE Hg-T	500 mL	71666330 10	none	n/a		Cooler

Lab ID: 1242035-02
Sample: Hg Blk BioReactor 1 Inf
Report Matrix: DIW
Sample Type: Field Blank
Collected: 10/17/2012
Received: 10/19/2012

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Bottle FLPE Hg-T	500 mL	71666330 10	none	n/a		Cooler

Lab ID: 1242035-03
Sample: BioReactor 2 Inf
Report Matrix: Influent
Sample Type: QC Sample
Collected: 10/17/2012
Received: 10/19/2012

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Bottle FLPE Hg-T	500 mL	71666330 10	none	n/a		Cooler

Lab ID: 1242035-04
Sample: Hg Blk BioReactor 2 Inf
Report Matrix: DIW
Sample Type: Field Blank
Collected: 10/17/2012
Received: 10/19/2012

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Bottle FLPE Hg-T	500 mL	71666330 10	none	n/a		Cooler

Lab ID: 1242035-05
Sample: BioReactor 2 Eff
Report Matrix: Effluent
Sample Type: Sample
Collected: 10/17/2012
Received: 10/19/2012

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Bottle FLPE Hg-T	500 mL	71666330 10	none	n/a		Cooler

Lab ID: 1242035-06
Sample: Hg Blk BioReactor 2 Eff
Report Matrix: DIW
Sample Type: Field Blank
Collected: 10/17/2012
Received: 10/19/2012

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Bottle FLPE Hg-T	500 mL	71666330 10	none	n/a		Cooler

Project ID: DUK-HV1201
PM: Tiffany Stilwater

Client PM: Jay Perkins
Client PO: 141391

Shipping Containers

Cooler

Received: October 19, 2012 9:45
Tracking No: 7992 2521 0993 via FedEx
Coolant Type: Ice
Temperature: 1.8 °C

Description: Cooler
Damaged in transit? No
Returned to client? No

Custody seals present? No
Custody seals intact? No
COC present? Yes

1242035

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST FORM

Duke Energy

Duke Energy Analytical Laboratory
Mail Code MGO3A2 (Building 7405)
13339 Hagers Ferry Rd
Huntersville, N. C. 28078
(704) 875-5245
Fax: (704) 875-4349

Analytical Laboratory Use Only

ORDER # J12100090 | Sample Class OTHER | Samples Originating From NC___ SC___

Logged By cpk | Date & Time 10-18-12 0710

SAMPLE PROGRAM: Water ___ Ground ___ NPDES ___ Drinking Water ___ UST ___ RCRA Waste ___

Cooler Temp (C) 1.5

[19]Page 2 of 2

DISTRIBUTION
ORIGINAL to LAB,
COPY to CLIENT

[1]Project Name: Allen - FGD NWTS (20+) Bi-Weekly Sampling		[2]Phone No:
[2] Client: Bill Kennedy, Robbin Jolly, Don Scruggs, Ray Lidke		[4]Fax No:
[5]Business Unit:	[6]Process:	Mail Code:
[8]Oper. Unit:	[9]Res. Type:	[10]Reso. Center:

Brooks Rand
PO#141391

[15]Preserv.: 1=HCL 2=H_2SO_4 3=HNO_3 4=Ice 5=None

MR #

Customer to complete all appropriate non-shaded areas.

[16]Analyses Required

LAB USE ONLY

[11]Lab ID	Se Speciation Bottle ID	[13]Sample Description or ID	Date	Time	Signature	[17]Comp.	[18]Grab		
									5
20202137		BioReactor 1 Inf	10/17/12	1205	Chris Williams				1
38		Hg Blk BioReactor 1 Inf	10/17/12	1205	Chris Williams				1
39		BioReactor 2 Inf	10/17/12	1211	Chris Williams				1
40		Hg Blk BioReactor 2 Inf	10/17/12	1211	Chris Williams				1
41		BioReactor 2 Eff	10/17/12	1218	Chris Williams				1
42		Hg Blk BioReactor 2 Eff	10/17/12	1218	Chris Williams				1
									6

Hg 1631 Tot

Use the Bioreactor 1 Inf or Eff sample as the MS/MSD

1) Relinquished By: Christopher Williams	Date/Time: 10/17/12 1600	2) Accepted By: cpk	Date/Time: 10-18-12
3) Relinquished By	Date/Time	4) Accepted By:	Date/Time: 10/19/12 0945
5)Relinquished By	Date/Time	6)Accepted By:	Date/Time
7)Relinquished By: cpk	Date/Time: 10-18-12	8)Accepted By:	Date/Time
9)Seal/Locked By: cpk	Date/Time: 10-18-12	10) Seal/Lock Opened By	Date/Time
11)Seal/Locked By	Date/Time	12)Seal/Lock Opened By	Date/Time

Comments: * Metals=As, Ag, B, Cu, Cr, Ni, Se, Zn

[22]Requested Turnaround

14 Days ___
*7 Days ___
*48 Hr ___
*Other ___
* Add. Cost Will Apply

10-26-12

APPLIED SPECIATION AND CONSULTING, LLC

18804 Northcreek Parkway Bothell, WA, 98011
Tel: (425) 483-3300 Fax: (425) 483-9818
www.appliedspeciation.com

October 26, 2012

Jay Perkins
Duke Energy Analytical Laboratory
Mail Code MGO3A2 (Building 7405)
13339 Hagers Ferry Rd.
Huntersville, NC 28078
(704) 875-5245

Project: Allen - FGD WWTS (2010, Bi-Monthly Sampling) (LIMS #J12100090)

Dear Mr. Perkins,

Attached is the report associated with three (3) aqueous samples submitted for selenium speciation analysis on October 18, 2012. The samples were received in a sealed cooler at 9.4°C on October 19, 2012. Selenium speciation analysis was performed via ion chromatography inductively coupled plasma collision reaction cell mass spectrometry (IC-ICP-CRC-MS). Any issues associated with the analysis are addressed in the following report.

If you have any questions, please feel free to contact me at your convenience.

Sincerely,

Russell Gerads
Vice President
Applied Speciation and Consulting, LLC

Applied Speciation and Consulting, LLC

Report prepared for:

Jay Perkins
Duke Energy Analytical Laboratory
Mail Code MGO3A2 (Building 7405)
13339 Hagers Ferry Rd.
Huntersville, NC 28078

Project: Allen - FGD WWTS (2010, Bi-Monthly Sampling) (LIMS #J12100090)

October 26, 2012

1. Sample Reception

Three (3) aqueous samples in 125mL HDPE bottles (provided by Applied Speciation and Consulting) were submitted for selenium speciation analysis on October 18, 2012. The samples were received on October 19, 2012 in a sealed container at 9.4°C.

Applied Speciation and Consulting strongly recommends that all samples submitted for selenium speciation remain at a temperature of ≤6°C to maintain sample integrity prior to analysis.

The samples were received in a laminar flow clean hood, void of trace metals contamination and ultra-violet radiation, and were designated discrete sample identifiers. An aliquot of each sample was filtered (0.45µm) and each filtrate was stored in a secure, monitored cryofreezer (maintained at a temperature of -80^{o}C) until selenium speciation analysis could be performed via ion chromatography inductively coupled plasma collision reaction cell mass spectrometry (IC-ICP-CRC-MS).

2. Sample Preparation

All sample preparation is performed in laminar flow clean hoods known to be free from trace metals contamination. All applied water for dilutions and sample preservatives are monitored for contamination to account for any biases associated with the sample results.

Selenium Speciation Analysis by IC-ICP-CRC-MS Prior to analysis, an aliquot of each sample was filtered with a syringe filter (0.45µm) and injected directly into an autosampler vial. No further sample preparation was performed as any chemical alteration of a sample may shift the equilibrium of the system, resulting in changes in speciation ratios.

3. Sample Analysis

All sample analysis is preceded by a minimum of a five-point calibration curve spanning the entire concentration range of interest. Calibration curves are performed at the beginning of each analytical day. All calibration curves, associated with each species of interest, are standardized by linear regression resulting in a response factor. All sample results are **instrument blank corrected** to account for any operational biases associated with the analytical platform.

Prior to sample analysis, all calibration curves are verified using second source standards which are identified as initial calibration verification standards (ICV).

Ongoing instrument performance is identified by the analysis of continuing calibration verification standards (CCV) and continuing calibration blanks (CCB) at a minimum interval of every ten analytical runs.

Selenium Speciation Analysis by IC-ICP-CRC-MS Each sample for selenium speciation analysis was analyzed by ion chromatography inductively coupled plasma collision reaction cell mass spectrometry (IC-ICP-CRC-MS) on October 25, 2012. An aliquot of each sample is injected onto an anion exchange column and mobilized by a basic (pH > 7) gradient. The eluting selenium species are then introduced into a radio frequency (RF) plasma where energy-transfer processes cause desolvation, atomization, and ionization. The ions are extracted from the plasma through a differentially-pumped vacuum interface and travel through a pressurized chamber (CRC) containing a reaction gas which preferentially reacts with interfering ions of the same target mass to charge ratios (m/z). A solid-state detector detects ions transmitted through the mass analyzer and the resulting current is processed by a data handling system.

Retention times for each eluting species are compared to known standards for species identification.

4. Analytical Issues

The overall analyses went well and no significant analytical issues were encountered. All quality control parameters associated with the samples were within acceptance limits.

The estimated method detection limits (eMDLs) for selenite, selenate, and selenocyanate are generated from replicate analyses of the lowest standard in the calibration curve. Not all selenium species are present in preparation blanks; therefore, eMDL calculations based on preparation blanks are artificially biased low.

The eMDL for methylseleninic acid and selenomethionine is calculated from the average eMDL of selenite, selenate, and selenocyanate. The calibration does not contain methylseleninic acid or selenomethionine due to impurities in these standards which would bias the results for other selenium species.

If you have any questions or concerns regarding this report, please feel free to contact me.

Sincerely,

Russell Gerads
Vice President
Applied Speciation and Consulting, LLC

Selenium Speciation Results for Duke Energy
Project Name: Allen - FGD WWTS (2010, Bi-Monthly Sampling)
Contact: Jay Perkins
LIMS #J12100090

Date: October 26, 2012
Report Generated by: Russell Gerads
Applied Speciation and Consulting, LLC

Sample Results

Sample ID	Se(IV)	Se(VI)	SeCN	MeSe(IV)	SeMe	Unknown Se Species (n)
FGD Purge Eff	547	324	26.2	ND (<1.4)	ND (<1.4)	17.8 (2)
BioReactor 1 Inf	ND (<0.34)	ND (<0.51)	ND (<0.23)	ND (<0.36)	ND (<0.36)	0.0 (0)
BioReactor 2 Eff	19.2	531	ND (<0.23)	0.80	ND (<0.36)	0.62 (1)

All results reflect the applied dilution and are reported in µg/L
ND = Not detected at the applied dilution
SeCN = Selenocyanate
MeSe(IV) = Methylseleninic acid
SeMe = Selenomethionine
Unknown Se Species = Total concentration of all unknown Se species observed by IC-ICP-MS

Selenium Speciation Results for Duke Energy
Project Name: Allen - FGD WWTS (2010, Bi-Monthly Sampling)
Contact: Jay Perkins
LIMS #J12100090

Date: October 26, 2012
Report Generated by: Russell Gerads
Applied Speciation and Consulting, LLC

Quality Control Summary - Preparation Blank Summary

Analyte (µg/L)	PBW1	PBW2	PBW3	PBW4	Mean	StdDev	eMDL*	eMDL 250x	eMDL 1000x
Se(IV)	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.34	1.4
Se(VI)	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.51	2.0
SeCN	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.23	0.93
MeSe(IV)	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.36	1.4
SeMe	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.36	1.4

eMDL = Estimated Method Detection Limit
*Please see narrative regarding eMDL calculations

Quality Control Summary - Certified Reference Materials

Analyte (µg/L)	CRM	True Value	Result	Recovery
Se(IV)	LCS	9.57	9.62	100.5
Se(VI)	LCS	9.48	9.18	96.8
SeCN	LCS	8.92	8.95	100.3
MeSe(IV)	LCS	6.47	6.75	104.3
SeMe	LCS	9.32	8.32	89.3

Selenium Speciation Results for Duke Energy
Project Name: Allen - FGD WWTS (2010, Bi-Monthly Sampling)
Contact: Jay Perkins
LIMS #J12100090

Date: October 26, 2012
Report Generated by: Russell Gerads
Applied Speciation and Consulting, LLC

Quality Control Summary - Matrix Duplicates

Analyte (µg/L)	Sample ID	Rep 1	Rep 2	Mean	RPD
Se(IV)	BioReactor 2 Eff	19.24	18.58	18.91	3.5
Se(VI)	BioReactor 2 Eff	530.9	527.7	529.3	0.6
SeCN	BioReactor 2 Eff	ND (<0.23)	ND (<0.23)	NC	NC
MeSe(IV)	BioReactor 2 Eff	0.80	0.79	0.79	1.7
SeMe	BioReactor 2 Eff	ND (<0.36)	ND (<0.36)	NC	NC

ND = Not detected at the applied dilution
NC = Value was not calculated due to one or more concentrations below the eMDL

Quality Control Summary - Matrix Spike/ Matrix Spike Duplicate

Analyte (µg/L)	Sample ID	Spike Conc	MS Result	Recovery	Spike Conc	MSD Result	Recovery	RPD
Se(IV)	BioReactor 2 Eff	1390	1522	108.1	1390	1527	108.5	0.4
Se(VI)	BioReactor 2 Eff	1261	1720	94.4	1261	1719	94.3	0.0
SeCN	BioReactor 2 Eff	1144	1011	88.4	1144	1003	87.7	0.8

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST FORM

Duke Energy

Duke Energy Analytical Laboratory
Mail Code MGO3A2 (Building 7405)
13339 Hagers Ferry Rd
Huntersville, N. C. 28078
(704) 875-5245
Fax: (704) 875-4349

Analytical Laboratory Use Only

LIMS # J2100990 | Sample Class ASHBAS other | Samples Originating From NC___ SC___

Logged By cpk | Date & Time 10-18-12 0710

SAMPLE PROGRAM: Water ___ Ground ___ NPDES ___ Drinking Water ___ UST ___ RCRA Waste ___

1.5 Cooler Temp (C)

AS&C
PO#133241

[19]Page 1 of 2
DISTRIBUTION
ORIGINAL to LAB,
COPY to CLIENT

1)Project Name	Allen - FGD	2)Phone No:
	AWQC (2010 Bi-Monthly Sampling)	
2) Client:	Don Scruggs, Robbin Jolly, Ray Lidke, Bill Kennedy	4)Fax No:
5)Business Unit:	6)Process:	Mail Code:
8)Oper. Unit:	9)Res. Type:	10)Resp. Center:

Customer to complete all appropriate non-shaded areas.

MR #

[15]Preserv.: 1=HCl 2=H_2SO_4 3=HNO_3 4=Ice 5=None

[16]Analyses Required

LAB USE ONLY [11]Lab ID	Se Speciation Bottle ID	[13]Sample Description or ID	Date	Time	Signature	[17]Comp.	[18]Grab	TDS	Cl, Br (Dionex)	Metals* + Hg**	Se, soluble (no dig.)	Se, speciation - vendor to (Important to place filled bottle back into both baggies)
						4			4	3,4	3,4	4
2021129		FGD Purge Eff	10/17/12	1240	Chris Williams	7		1	1	1	1	1
30		EQ Tank Eff.	10/17/12	1223	Chris Williams	4				1	1	
31		BioReactor 1 Inf	10/17/12	1205	Chris Williams	4				1**	1	1
32		BioReactor 2 Inf	10/17/12	1211	Chris Williams	2				1**		
33		BioReactor 2 Eff	10/17/12	1218	Chris Williams	5			1	1		1
34		Filter Blk	10/17/12	1250	Chris Williams						1	
35		Metals Trip Blk	10-17-12	1115	[signature]					1**		
						Filtering of soluble Se performed in the field						
								1	2	6	4	3

1) Relinquished By	Date/Time	2) Accepted By	Date/Time
Christopher Williams	10/17/12 1600	cpk	10-18-12
3) Relinquished By	Date/Time	4) Accepted By	Date/Time
5)Relinquished By	Date/Time	6)Accepted By:	Date/Time
7)Relinquished By cpk	Date/Time 10-18-12	8)Accepted By:	Date/Time
9)Seal/Locked By cpk	Date/Time 10-18-12	10) Seal/Lock Opened By Angel Jacki Ford	Date/Time 10/19/12 1100
11)Seal/Locked By	Date/Time	12)Seal/Lock Opened By	Date/Time

*9.4°C

*cooler full of water

Comments

* Metals=As, Cr, Cu, Ni, Se, Ag, Zn by TRM/IMS, B by TRM/ICP 1**=No Hg analyzed

[22]Requested Turnaround

14 Days ___
*7 Days ___
*48 Hr ___
*Other ___
* Add. Cost Will Apply

10-26-12

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST FORM

Duke Energy SM

Duke Energy Analytical Laboratory
Mail Code MGO3A2 (Building 7405)
13339 Hagers Ferry Rd
Huntersville, N. C. 28078
(704) 875-5245
Fax: (704) 875-4349

Analytical Laboratory Use Only

LIMS # J1210090 | Sample Class ASHBAS other | Samples Originating From | NC ___ SC ___

Logged By cpk | Date & Time 10-18-12 0710 | SAMPLE PROGRAM Ground Water ___ NPDES ___ Drinking Water ___ UST ___ RCRA Waste ___

1.5 Cooler Temp (C)

AS&C PO#133241

[19]Page 1 of 2
DISTRIBUTION
ORIGINAL to LAB,
COPY to CLIENT

Customer must Complete

1)Project Name: Allen - FGD WWTS (2010, Bi-Monthly Sampling)		2)Phone No:
2) Client: Don Scruggs, Robbin Jolly, Ray Lidke, Bill Kennedy		4)Fax No:
5)Business Unit:	6)Process:	Mail Code:
8)Oper. Unit:	9)Res. Type:	10)Resp. Center:

MR #

Customer to complete all appropriate non-shaded areas.

Sampling conducted: 2nd and 4th Monday

[15]Preserv.: 1=HCl 2=H_2SO_4 3=HNO_3 4=Ice 5=None

[16]Analyses Required

LAB USE ONLY [11]Lab ID	Se Speciation Bottle ID	[13]Sample Description or ID	Date	Time	Signature	[17]Comp.	[18]Grab	TDS		Cl, Br (Dionex)	Metals* + Hg**	Se, soluble (no dig.)				Se, speciation - vendor to AS&C (important to place filled bottle back into both baggies)
								4		4	3,4	3,4				4
20 1202 1129		FGD Purge Eff	10/17/12	1240	Chris Williams	7		1		1	1	1				1
30		EQ Tank Eff.	10/17/12	1223	Chris Williams	4					1	1				
31		BioReactor 1 Inf	10/17/12	1205	Chris Williams	4					1**	1				1
32		BioReactor 2 Inf	10/17/12	1211	Chris Williams	2					1**					
33		BioReactor 2 Eff	10/17/12	1218	Chris Williams	5				1	1					1
34		Filter Blk	10/17/12	1250	Chris Williams							1				
35		Metals Trip Blk	10-3-12	1115	[signature]						1**					
						Filtering of soluble Se performed in the field										
								1		2	6	4				3

Customer to complete appropriate columns to right

Customer to sign & date below - fill out from left to right.

1) Relinquished By: Christopher Williams	Date/Time: 10/17/12 1600	2) Accepted By: cpk	Date/Time: 10-18-12
3) Relinquished By:	Date/Time:	4) Accepted By:	Date/Time:
5)Relinquished By:	Date/Time:	6)Accepted By:	Date/Time:
7)Relinquished By: cpk	Date/Time: 10-18-12	8)Accepted By:	Date/Time:
9)Seal/Locked By: cpk	Date/Time: 10-18-12	10) Seal/Lock Opened By:	Date/Time:
11)Seal/Locked By:	Date/Time:	12)Seal/Lock Opened By:	Date/Time:

Comments

* Metals=As, Cr, Cu, Ni, Se, Ag, Zn by TRM/IMS, B by TRM/ICP 1**=No Hg analyzed

Customer, IMPORTANT! Please indicate desired turnaround.

[22]Requested Turnaround

14 Days ___
*7 Days ___
*48 Hr ___
*Other ___
* Add. Cost Will Apply

10-26-12

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST FORM

Duke Energy Analytical Laboratory
Mail Code MGO3A2 (Building 7405)
13339 Hagers Ferry Rd
Huntersville, N. C. 28078
(704) 875-5245
Fax: (704) 875-4349

Analytical Laboratory Use Only

ORDER # J1210090 | Sample Class OTHER | Samples Originating From NC___ SC___

Logged By cpk | Date & Time 10-18-12 0710 | SAMPLE PROGRAM Ground Water ___ NPDES ___ Drinking Water ___ UST ___ RCRA Waste ___

Cooler Temp (C) 1.5

[19]Preserv.: 1=HCL 2=H_2SO_4 3=HNO_3 4=Ice 5=None

Brooks Rand
PO#141391

[19]Page 2 of 2
DISTRIBUTION
ORIGINAL to LAB,
COPY to CLIENT

Customer must Complete

1)Project Name: Allen - FGD WWTS (2011, Bi-Weekly Sampling)		2)Phone No:
2) Client: Bill Kennedy, Robbin Jolly, Don Scruggs, Ray Lidke		4)Fax No:
5)Business Unit:	6)Process:	Mail Code:
8)Oper. Unit:	9)Res. Type:	10)Reso. Center:

MR #

Customer to complete all appropriate non-shaded areas.

Sampling conducted: 2nd Monday each month

Customer to complete appropriate columns to right

LAB USE ONLY [11]Lab ID	Se Speciation Bottle ID	[13]Sample Description or ID	Date	Time	Signature	[17]Comp.	[18]Grab	[16]Analyses Required: Hg 1631 (sample 2nd week)
2012021137		BioReactor 1 Inf	10/17/12	1205	Chris Williams			1
38		Hg Blk BioReactor 1 Inf	10/17/12	1205	Chris Williams			1
39		BioReactor 2 Inf	10/17/12	1211	Chris Williams			1
40		Hg Blk BioReactor 2 Inf	10/17/12	1211	Chris Williams			1
41		BioReactor 2 Eff	10/17/12	1218	Chris Williams			1
42		Hg Blk BioReactor 2 Eff	10/17/12	1218	Chris Williams			1
								6

Use the Bioreactor 2 Inf or Eff sample as the MS/MSD

Customer to sign & date below - fill out from left to right.

1) Relinquished By: Christopher Williams	Date/Time: 10/17/12 1600	2) Accepted By: cpk	Date/Time: 10-18-12
3) Relinquished By:	Date/Time:	4) Accepted By:	Date/Time:
5)Relinquished By:	Date/Time:	6)Accepted By:	Date/Time:
7)Relinquished By: cpk	Date/Time: 10-18-12	8)Accepted By:	Date/Time:
9)Seal/Locked By: cpk	Date/Time: 10-18-12	10) Seal/Lock Opened By	Date/Time:
11)Seal/Locked By:	Date/Time:	12)Seal/Lock Opened By	Date/Time:

Comments
* Metals=As, Ag, B, Cu, Cr, Ni, Se, Zn

Customer, IMPORTANT!
Please indicate desired turnaround.

[22]Requested Turnaround
14 Days ___
*7 Days ___
*48 Hr ___
*Other ___
* Add. Cost Will Apply
10-26-12